

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
23 September 2004 (23.09.2004)

PCT

(10) International Publication Number
WO 2004/082245 A2

- (51) International Patent Classification⁷: **H04M**
- (21) International Application Number:
PCT/US2004/006756
- (22) International Filing Date: 5 March 2004 (05.03.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
10/388,063 12 March 2003 (12.03.2003) US
- (71) Applicant (for all designated States except US): **QUALCOMM INCORPORATED** [US/US]; 5775 Morehouse Drive, San Diego, CA 92121 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **YU, Julie** [US/US]; 48700 Algonquin Court, San Diego, CA 92130 (US). **HOREL, Gerald** [CA/CA]; 6500 Torin Road, Brentwood Bay, British Columbia V8M2H5 (CA). **PATWARI,**

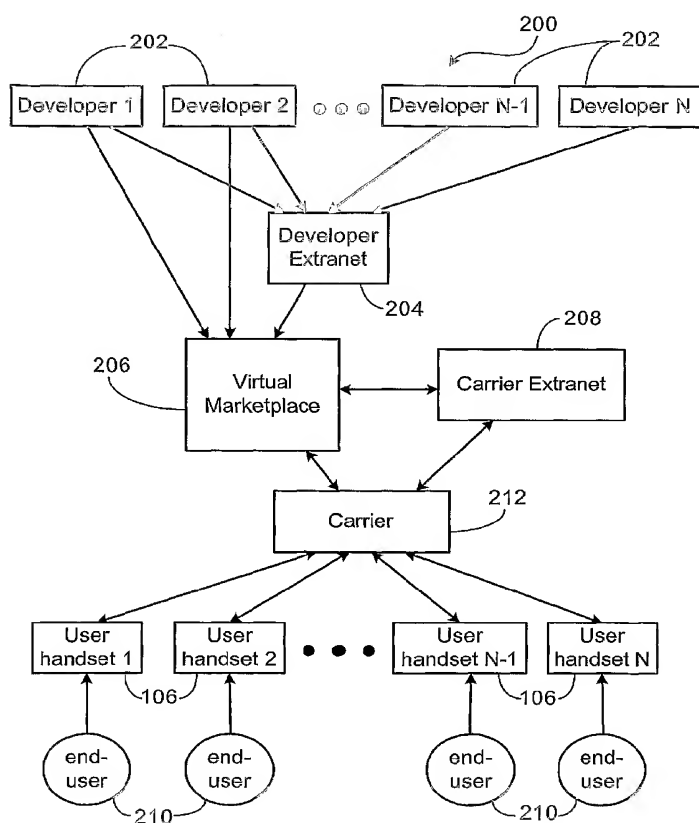
Jaiteerth [IN/US]; 9974 Kika Court, #7424, San Diego, CA 92129 (US). **KLEIN, Michelle** [US/US]; 4104 Kerwood Court, San Diego, CA 92130 (US). **OLIVER, Mitchell B.** [US/US]; 9737 Caminito Suelto, San Diego, CA 92131 (US).

(74) Agents: **WADSWORTH, Philip R.** et al.; 5775 Morehouse Drive, San Diego, CA 92121 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: AUTOMATIC SUBSCRIPTION SYSTEM FOR APPLICATIONS AND SERVICES PROVIDED TO WIRELESS DEVICES



(57) Abstract: A system, method, and computer program that automatically creates a subscription for applications and services provided to wireless devices from other computer devices on a wireless network, where the subscription requires periodic payment by the wireless device subscriber for continued access to the application or service. The system monitors wireless device end-user interaction with other computer devices, such as application download servers, across the wireless network and when the end-user obtains an application or service from the computer device, the system automatically records the subscription and can either bill the wireless device subscriber for the subscription(s) or transmit the bill to the carrier or other entity to bill the subscriber.



(84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ,

TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

AUTOMATIC SUBSCRIPTION SYSTEM FOR APPLICATIONS AND SERVICES PROVIDED TO WIRELESS DEVICES

BACKGROUND OF THE INVENTION

I. Field of the Invention

[0001] The present invention generally relates to wireless telecommunications and computer networks. More specifically, the present invention relates to a system and method for providing an infrastructure to support an automatic subscription of wireless devices and an end-to-end billing arrangement for services provided to wireless device service subscribers by network carriers and third parties.

II. Description of the Related Art

[0002] Wireless devices, such as cellular telephones, communicate packets including voice and data over a wireless network. In existing wireless telecommunication systems, such as cellular telecommunication systems, a wireless service provider or carrier has wireless service subscribers that pay the provider for the time that the wireless device of the subscriber accesses the cellular network. Fees are typically charged to the subscriber for the initial activation of a telecommunication device and then fees can be charged for ongoing airtime and device usage. However, existing systems typically do not account for other activities at the telecommunication device beyond airtime usage.

[0003] Further, if the subscriber of the wireless device desires to download and use a software application or upgrade the functionality of the telecommunication device, the user will typically either call a service provider or contact the service provider through another electronic means, such as through a separate Internet access. In some instances, the service provider can transmit the application to the wireless device across the wireless network (through a one time direct access download) or allow the user access a network site with the wireless device through the wireless network and at such site the application is downloadable or accessible to the subscriber. Otherwise service personnel of the provider must have physical access to the telecommunication device to install the software or upgrade the components thereof.

[0004] Further, the proliferation of computer technology has made it easier and cheaper to develop software application. A computer programmer can easily develop a video game or a utility application on a personal computer, and the programmer can tailor the game to run on different computer hardware platforms including on a wireless handset.

However, the individual application developer encounters difficulty in getting the product to market, especially for applications that are executable on wireless devices. The developer must first create a full version of the application and then sell it to the carriers in order to derive any income. Consequently, creating application for the wireless device market is a huge investment by the developer without the guarantee of return.

[0005] Wireless telecommunications carriers may rely on independent developers to develop applications for their users, but this arrangement would create new problems for the carriers. Now, the carriers, instead of hiring many developers, needs to track usages of products developed by these independent developers and pay them accordingly, which can be a huge task itself.

[0006] Accordingly, it would be advantageous to provide a system and method that handles end-to-end billing for carriers. Such system should allow wireless services provides to deliver value-added products and services to their subscribers beyond simple airtime, and allow the application developer to receive payments for their products. It is thus to such a system and method for automatically managing subscription billing for wireless device subscribers that the present invention is primarily directed.

SUMMARY OF THE INVENTION

[0007] The present invention discloses a system, method, and computer program that automatically manages an application or service subscription price plan for applications and services provided to wireless devices from other computer devices on a wireless network during wireless device end-user interaction with the computer devices. Once an application or subscription is activated, the subscription requires periodic payment (such as monthly) by the wireless device carrier service subscriber (who is not necessarily the end-user at the wireless device interacting on the network) for continued access to the application or service. The wireless device end-user interaction with other computer devices, such as application download servers, is monitored, either directly if the interaction is with the same server that records application or service subscription data, or across the wireless network when the end-user obtains an application or service from another computer device. The application or service subscription can either be billed directly to the wireless device subscriber for the subscription(s) or a bill transmitted to

the carrier or other entity to bill the subscriber. In one embodiment, the system includes one or more wireless devices selectively in communication with other computer devices across a wireless network, where each wireless device has an end-user thereof and a computer platform that is able to selectively download and execute software applications thereupon and is accessible by the end-user. At least one server is selectively in communication and interacts with the one or more wireless devices across the wireless network, such interaction typically occurring upon request of the end-user of the wireless device through the wireless network to download or interact with the server. The end-user interaction with at least one server across the wireless network causes a subscription of an application or service, which can be recorded and billed for at the same server or through the interaction of several computer devices on the wireless network.

[0008] The method for managing subscription price plans for applications and services provided to wireless devices from computer devices on a wireless network particularly includes the steps of causing a subscription of an application and service to occur from end-user interaction between the wireless device and a server, and recording the subscriptions for the wireless devices at the server. The method can also include the steps of billing the wireless device carrier service subscriber and tracking subscription deletion at the wireless device to automatically discontinue the subscription.

[0009] The present system and method thus enable wireless telecommunications carriers to offer value-added services from individual developers providing applications and services to wireless service subscribers without needing to build up a requisite infrastructure for providing the application and services. The system can provide further support by generating invoices to the carrier themselves, carrier subscribers, and can disburse payments for the subscriptions to the applications and service providers, however, in one embodiment, the system simply forwards the subscription records to the carrier for billing and collection. The user of the system can thus tailor the degree of control and responsibility of the billing server(s) in supporting third party applications and services to the wireless devices.

[0010] Other objects, advantages, and features of the present invention will become apparent after review of the hereinafter set forth Brief Description of the Drawings, Detailed Description of the Invention, and the Claims.

BRIEF DESCRIPTION OF THE DRAWINGS

- [0011] Fig. 1 is a system diagram depicting an embodiment of telecommunication system that supports the automatic subscription system.
- [0012] Fig. 2 is a block diagram illustrating one embodiment of the interface architecture between the third party developers, network carriers, and wireless devices.
- [0013] Fig. 3 is a flowchart illustrating an end-user application or service subscription process.
- [0014] Fig. 4 is a flowchart illustrating a subscription process on a third party application server.
- [0015] Fig. 5 is a flowchart illustrating an end-user subscription termination process.
- [0016] Fig. 6 is a flowchart illustrating a deletion process on a third party computer device.
- [0017] Fig. 7 is a flowchart illustrating a monthly invoicing process of the wireless subscriber of the carrier network.
- [0018] Fig. 8 is a diagram illustrating a multi-party settlement map for third party applications and services provided to the end-users of a wireless network carrier.
- [0019] Fig. 9 is an illustration of an invoice record according to one embodiment of the system.
- [0020] Fig. 10 is an illustration of a product (application or service) record according to one embodiment of the system.
- [0021] Fig. 11 is an exemplary embodiment of a billing server.

DETAILED DESCRIPTION OF THE INVENTION

- [0022] In this description, the terms “communication device,” “wireless device,” “hand held telephone,” and “handset” are used interchangeably, the terms “server” and “end-to-end billing system” are used interchangeably, and the term “application” as used herein is intended to encompass executable and non-executable software files, raw data, aggregated data, patches, and other code segments. A “wireless device service subscriber” is a carrier service customer that pays a carrier for network airtime, i.e. voice and data calls from the wireless device. And an “application or service subscription” is a value-added service or application purchased by the wireless device end-user from another computer device on the network, such as an application download server, which is typically billed periodically, e.g. monthly. A “value-added”

subscriber” is a party who subscribes to a value-added service and does not have to initiate an automatic subscription when accessing the subscribed value-added service. Thus, in some instances, the purchasing end-user may not be the same person as wireless device subscriber, an example being a child end-user using the wireless device of the parent who is actually the wireless device service subscriber. Further, like numerals refer to like elements throughout the several views. With the advent of 3rd generation (3G) wireless communication technology, more bandwidth becomes available for wireless communications, and handsets and wireless telecommunication devices, such as cellular telephones, pagers, personal digital assistants (PDAs) with increasing capabilities have become available. Now, users can check weather, receive e-mails, receive paging messages, traverse the Internet, and play an interactive game with a remote party all through his wireless handset, in addition to using it for maintaining audio communications with another party. At the same time, proliferation of computer technology has made easier and cheaper to develop digital media and deliver it to the wireless devices. The provision of more value added services, such as downloadable applications, can bring revenue to a wireless service provider or carrier, and one manner to achieve the additional revenue is to provide support to independent application developers. The present invention thus provides the billing support for third party independent application providers who provide applications to end-users of a network carrier as is further described herein.

[0023] Fig. 1 depicts a communication network 100 used according to the present invention. The communication network 100 includes a wireless communications network, a public switched telephone network (PSTN) 110, and the Internet 120. The wireless communication network includes one or more communication towers 102, each connected to a base station (BS) 104 and serving users with communication devices 106. The communication devices 106 can be cellular telephones, pagers, personal digital assistants (PDAs), laptop computers, or other hand-held, stationary, or portable communication device that uses a wireless and cellular telecommunication network. The commands and data input by each user are transmitted as digital data to a communication tower 102. The communication between a user using a communication device 106 and the communication tower 102 can be based on different technologies, such code division multiplexed access (CDMA), time division multiplexed access (TDMA), frequency division multiplexed access (FDMA), global system for mobile

communications (GSM), or other protocols that may be used in a wireless communications network or a data communications network. The data from each user is sent from the communication tower 102 to a base station (BS) 104, and forwarded to a mobile switching center (MSC) 108, which may be connected to a public switched telephone network (PSTN) 110.

[0024] The PSTN 110 is connected to the Internet 120 and to the wireless communication network through a MSC 108. The PSTN 110 supports users accessing the Internet using a computer 116 through dial up services. The user utilizes the computer 116 and dials through a telephone line 118 to access an Internet service provider (ISP) 122. The ISP 122 provides connection between the user at the computer 116 and the Internet 120. Users at computers 114 may also access directly the ISP 122 through high-speed data connections such as digital subscriber line (DSL), T1 connections, and the like. The Internet 120 is a high-speed data network. A user may access the Internet directly by connecting to a hub on the Internet 120 or access through an ISP 122 connected to the Internet 120. A billing server 112 may be connected to the Internet 120, to the MSC 108, or to the PSTN 110. Preferably, the billing server 112 is connected directly to the MSC 108. However, the server 112 does not necessarily need access to the wireless device 106 but can solely reside on the network and a file level interface from the server can collect and transform the device download event into a billable usage record.

[0025] Fig. 2 is an interface architecture 200 that depicts data flow in a virtual marketplace available for access by the wireless devices 106 that causes an automatic subscription for applications and services accessed by the wireless devices 106. The automatic subscription system of the present application may be a subsystem of the virtual marketplace 206 according to one embodiment, and it may also be an independent system providing the billing services to the virtual marketplace according to another embodiment. The independent developers 202, who generally have access to a computer 114 or 116, can submit their products through an interface 204, also known as the developer extranet, to the virtual marketplace 206, which can reside on a billing server, an application download server, or any computer device on the wireless network. Thus one server can provide the entire virtual marketplace with full billing and collection of proceeds as is further defined herein, or billing can be a separate system from the virtual marketplace with an interface to the marketplace to create the rated

billing records and to process subscription billing services. The developers 202 may also submit their products through the developer extranet 204, which then forwards to the virtual marketplace 206, or the developers can submit the product directly to the virtual marketplace 206. If the developer is the carrier then the application is submitted through the carrier extranet 208. The interface 204 may be a web site in communication with the server or a file transfer protocol (FTP) conforming port on the server 112, or other data interconnection. The carrier extranet 208 may be an interface to the carrier's private network. It should be noted that the developer extranet 204 and carrier extranet 208 typically interface to a common server 112 or database that enables the virtual marketplace 206. If the developer extranet and carrier extranet cannot be hosted on private networks to enable interaction between the two without some common connectivity, the negotiation can occur through both extranets interfacing over the Internet to the server 112 or common database.

[0026] In one embodiment, before a developer 202 is allowed to submit his product, such as a software application, to the virtual marketplace 206, the developer 202 must certify that the product conforms to the standards established by the virtual marketplace 206. The virtual marketplace 206 publishes a set of standards for its environment that should be followed by developers who wish to submit their products to the virtual marketplace 206. Standardizing the products ensures the product can run without problems on a user handset that supports the virtual marketplace's environment. One example of such environment is Binary Runtime Environment for Wireless (BREW™) and BREW Distributed System (BDS) developed by Qualcomm Corporation. The product may also be required to be tested for conformance by a third party testing organization.

[0027] After the developer 202 submits the product, the developer extranet enables negotiation of the price for the product between the developer 202 and carrier. The negotiation may be conducted directly between the carrier(s), other third parties, and the developers 202 within the virtual marketplace 206 using the developer extranet (204), or through the carrier (212) using the carrier extranet 208. Thus, developers 202 can negotiate with other developers, and carriers, to deliver applications and services to carrier customers. After the negotiation, the virtual marketplace 206 retains an agreed to application price plan between developer 202 and carrier 212. The product can be associated with the originating developer before negotiation starts.

[0028] After the product is included in the product catalog and made available to the users 210 of communication devices 106. An end-user 210 of the wireless device accesses the wireless telecommunications services through the carrier 212 receives the product catalog from the carrier 212. The end-user 210 can view the product catalog and select a product from the product catalog. The step of "selection" can be an application download, menu display, data transfer, diagnosis tool, or any other computer interaction between the wireless device 106 and billing server 112 or other communication device.

[0029] The selection is sent from the user wireless device 106 to the carrier 212, which forwards to the server 112, which in this capacity acts as an application download server. The server 112 checks the selection and downloads the product to the wireless device. The application is dispatched to the end-user's wireless device 106 via the carrier 212. After receiving the application, the end-user 210 can activate it on that end-user's wireless device 106. For certain products, the server 112 needs not to dispatch the entire product to the user device 106, but only a user interface portion of the product. The user interface interacts with the end-user 210 through the user wireless device 106 and sends information back to the server 112 where the application runs. Note that in another embodiment, the application runs on the device or it accesses services/content from a third party server and does not run on the server 112.

[0030] Fig. 3 illustrates an end-user process 300 at the wireless device 106. When the wireless device 106 is powered up and in communication with the carrier, the wireless device 106 receives a catalog of products and services that are available to the user, as shown at step 302, and displays the catalog on the wireless device display screen, as shown at step 304. The products and services available to the user may include interactive games, personal appointment applications, and other utility programs. The user can select a product with an associated price from the catalog, and the selection is received by the wireless device 106, as shown at step 306. The wireless device 106 sends the end-user selection and a download request to the carrier 212, as shown at step 308, through a data channel, and the carrier 212 forwards the selection along with the user and application download information to the server 112. The handset 106 also sends user information, which is normally minimal as carriers 212 are very sensitive to retaining the user specific information to the server 112 through the carrier 212, as shown at step 310. The server 112 retrieves the selected product and dispatches to the

user wireless device 106. When the end-user wireless device 106 receives the product, as shown at step 312, the end-user wireless device 106 activates the product for the end-user. It should be noted that in another embodiment, the download acknowledgement can be sent after step 312, as opposed to the time of application or service download.

[0031] Fig. 4 illustrates one embodiment of the virtual marketplace automatic subscription process 400 executing on a server 112. The server 112 receives the end-user selection along with the download request and the user information from the carrier 212 (or wireless device), as shown at step 402, along with the user information, and can check to see if the user is a value-added service subscriber, as shown at step 404, i.e. is a subscriber for the application download or interactive service. Although, it is not necessary to perform this check if the application or service subscription can be instigated anew by the wireless device end-user. The subscription can also be part of the download acknowledgement. For example, the download may be one time purchase of 30 days of use of an application, or a monthly subscription, and the end-user can have the option of pay per use or monthly subscription. If a check is made the user is a monthly wireless service subscriber, then the server 112 records the request, as shown at step 406, and retrieves the product, as shown at step 408. After retrieving the product, the server 112 sends the product via the carrier data network to the wireless device 106, as shown at step 410.

[0032] If so embodied, if the user is not a monthly subscriber, then the server 112 can check the user information received to see whether the user is a authorized subscriber of a wireless carrier, which would occur at decision 412. Conversely, the server 112 could be contacted by a prepaid wireless device or other device not subscribed to a specific carrier's service, and in which case another method of payment can be arranged with the end-user. Alternately, at this point a user authorization check can be made from the server 112 to a carrier 212 authorization service to validate that the user is a an authorized carrier user for the service. The user may be a wireless service subscriber and not yet a value-added service subscriber, and this would be a pay per use situation. If the wireless device 106 is a wireless service subscriber, then the server 112 has that wireless subscriber's information and an account set up for him. The server 112 records the request, as shown in step 414, and generates a one-time billable event, as shown in step 416. The server 112 can also generate a monthly billing record, step 418, and sends the billing record to the carrier 212, step 420. It should be noted that steps 414,

416, 418, 420 may not occur until after 410 as a billable event is not logged or account created at 422 a successful download is confirmed was successful. Alternately, the server 112 can send data to cause another device on the network to create a billing record for downloaded applications. For pay per use value-added subscribers, a billing record is generated for each application download or other subscription event. After the billing process is taken care of (pre-pay only), the server 112 proceeds to retrieve the product, step 408, and sends it to the user, step 410. For post pay events, the download proceeds and the download event is recorded and billing is handled after the end-user has the application on the device.

[0033] In another embodiment, the system also handles the situation when the user is using a pre-paid wireless telephone, i.e., the user is not a monthly wireless service subscriber. The wireless telephone device can be a pre-paid device, where the user can purchase in advance for wireless communications services. Further, an application download server can make a call to a carrier provided pre-pay service first to authorize the application download and secondly to debit the customer account. Pre-pay consumers are then not able to download subscription based applications. The amount of services purchased may be stored in the wireless device itself or in a card that can be inserted into the wireless device. This amount is debited each time the user makes a wireless call. When the amount is depleted, the wireless device can no longer place a wireless call, unless the user replenishes it at a dealer or purchases a new pre-paid card.

[0034] When a wireless device subscriber that has no existing subscription account selects a product for download, the server 112 can automatically create an account for this user, as shown in step 422, and then proceed similarly as if the user were a monthly subscriber. Such step is unnecessary if only usage records exist on the server 112. If so embodied, a billing record is generated, as shown at step 418, and sent to the carrier, as shown at step 420, before the product is retrieved, as shown at step 408, and sent to the user, as shown at step 410. The carrier 212 may deduct the amount from the billing record for the product from the user's pre-paid amount.

[0035] When recording the request as shown in step 406 or step 414, the server 112 can extract demographic information from the user information and record it along with the product information. One method of obtaining demographic information is using the Subscriber ID (SID) to derive detailed information about their customers and buying trends. The demographic information may be made available to the product's developer,

so the developer may have an idea about the user of his product. The demographic information may also be provided to the carriers and allowing the carriers to have a better picture about the users who tend to subscribe to similar products or services.

[0036] Fig. 5 illustrates an end-user process for terminating an active subscription of a product by using the deletion process 500. The end-user can select a product from the displayed active applications displayed on the wireless device 106, as shown in step 502. The wireless device 106 can display more than one catalog: one for all the products and one for the products targeted to the individual or groups that the user is associated with. The wireless device 106 receives the selection, as shown at step 504, and sends the deletion request along with the product and user information to the server 112, as shown at step 506. Alternately, if the application is solely resident on the wireless device 106, the user does not have to browse the catalog to delete the application and unsubscribe. The user can utilize an application manager to delete the application on the device and the delete event is queued and sent to the server 112 on the next data call.

[0037] Fig. 6 illustrates a server process 600 for a user terminating a subscription on a product for a specific value-added subscriber. When the server 112, either an application download server or transaction server, receives the deletion request and related information, step 602, the server 112 retrieves the user record, such as SID information, as shown at step 604, and updates the user record by removing the product from the list of active subscription products, as shown at step 606. The request can be simple deletion of a resident application for which the end-user has a subscription, and a flag or other notification means can be sent to the server 112 for notification of the deletion.

[0038] The system accordingly can support flexible subscription plans. A user may subscribe to a flat price service plan, where the user pays a fixed price per month and the wireless device subscriber can access all products listed in the catalog. The end-user may also subscribe to an adjustable price service plan, where the monthly subscription fee depends on how many products or what products the user has subscribed to. The user may also purchase an application based on a one-time flat fee for a specified number of uses service plan. The system will automatically account for the subscription in whatever method provided.

[0039] Fig. 7 illustrates the monthly invoice process 700, which can be a process on a carrier 212 server. If so embodied, the server 112 can periodically generate invoices or

other billing information for its monthly application and service subscribers every month and sends the invoices or other billing information to the carriers 212 of the wireless device service subscribers. The server 112 retrieves subscriber records, as shown at step 702, and then generates billing records for those wireless service subscribers as shown at step 704. Customer may utilize products which are subscription services or one-time purchase. Since the server 112 may support multiple carriers and users who are subscribers with different carriers, the billing records are segregated and sent to the carrier based on carrier specific tagged identifier, as shown at step 706.

[0040] Fig. 8 is a relationship map 800 illustrating the financial relationship between developers 202, the subscription billing system 802, carriers 212, and end-users at the wireless device 210. The subscription billing system 802 may support more than one carrier 212 and generate invoices separately for each carrier 212. The invoices generated are available for viewing by the developers 202. Each carrier 212 sends a bill to each individual user 210 who has subscribed or used a product or service from a product catalog, and receives a payment from each user 210. The carrier 212 pays the invoice to billing system 802, and the billing system 802 makes payments to the developers 202.

[0041] The relationship 800 shows the advantage of the present invention. For developers 202, the present invention allows for easy marketing of their products and eliminates the hassle of dealing with individual buyers or the trouble of searching for publishers to carry their products. For carriers 212, the present invention provides a way to make more products available to end users 210, thus providing new venues to generate more profits, without the need to hire a large number of software developers. For users 210, the present invention makes more applications available to the users 210 and maybe be eliminates the need for the users 210 to carry multiple electronic devices, such as pagers, personal digital assistants (PDAs), or even game devices.

[0042] Fig. 9 illustrates an exemplary embodiment of a billing record 900. The billing record 900 is kept in a billing database in the server 112 and has user identification 902, carrier identification 904, subscription plan identification 906, an invoice 908 (which can include rated price information, developer fee, and list price information) and usage information 910. The billing record is generated by the billing server 112 and sent to each carrier 212. The carrier 212 then bills the user for the rated price. The carrier 212 may adjust the invoice amount before billing the wireless device subscriber.

[0043] Fig. 10 illustrates a product record 1000 according to one embodiment of the invention. The product record 1000 is accessible to developers for viewing. It should be noted that sometimes only a subset of the billing record is accessible to the developer because there is carrier sensitive information in the billing record that is not available to the developer. The product record 1000 is kept in a product database in the billing server 112 and has a developer identification field 1002, a product identification field 1004, a subscription usage (such as list price) information field 1006, a pay-per-use usage information field 1008, and one or more user information fields 1010. The subscription usage field 1006 can list how many value-added subscribers have subscribed this product on monthly basis; the pay-per-use usage field 1008 can list how many specific value-added subscriber have subscribed this product on pay-per-use basis; the user information field 1010 may list demographical data extracted from the user information received. The usage record can also contain information such as subscriber id, timestamp, part number, part name, event type (i.e., download or delete), application list price, application developer fee, application license information, etc.

[0044] Fig. 11 illustrates one embodiment of the components of a billing server, such as can be implemented on server 112. The server 112 has an invoice generator 1102, a subscription recorder 1104, a developer interface 1106, a controller 1108, a product database 1110, a catalog library 1112, a developer account manager 1114, a carrier interface 1116, and a billing database 1118. The invoice generator 1102 generates invoices to the carriers; the subscription recorder 1104 records user selections; the developer interface 1106 receives product submissions from developers and provides access to the developer for viewing subscription information; the product database 1110 stores all the products submitted; the catalog library 1112 stores all the catalogs devised for different carriers and hardware platforms; the developer account manager 1114 provides subscription information or other data to the developers and makes payments to the developers; the carrier interface 1116 interfaces with the carriers; the billing database 1118 records billing records for all the users; and the controller 1108 oversees the operation of the server 112. In other embodiment, the application download server or transaction manager generates carrier invoices, and the carrier billing systems generate customer invoices. Consequently, the transaction manager manages active subscriptions and generates monthly subscription billing events that get exported to carrier billing systems and the transaction manager can supports billing services to

developers 202 for developer payment reconciliation but this summary usage information does not include carrier sensitive usage information such as SID, etc.

[0045] A developer can access the server 112 through the interface 204, which is handled by the developer interface 1106, by entering his developer identification number. The server 112 assigns to each developer an identification number and a password. After entering the identification number and the password, the billing server 112 allows the developer to access at least billing support services associated with the developer identification number.

[0046] It can thus be seen that the system yields a method for providing an end-to-end billing system 802 that supports multiple parties, where the subscription billing system 802 supports plurality of developers and a multitude of end-users through various carriers. The system is transparent to the end-user that only sees the subscription-causing event and the subscription-ending event, with the system handling the billing between those events. The billing system 802 sets up individual accounts for each developer, where the products developed by each developer is listed in his own account. The subscription billing system 802 also can associate each end-user with a carrier and records each end user's service plan. The system can also record product requests, deliver the product requested to the end-user, and generate invoices individually on per use basis or monthly on subscription basis. If so embodied, the payment collected from each carrier is recorded and an appropriate portion of the collected payment is distributed to the developers whose products have been used or subscribed by the end users.

[0047] In view of the method being executable on the computer platform of a computing device such as server 112, the present invention includes a program resident in a computer readable medium, where the program directs a server or other computing device having a computer platform to perform the steps of the method. The computer readable medium can be the memory of the server 112, or can be in a connective database. Further, the computer readable medium can be in a secondary storage media that is loadable onto a wireless device computer platform, such as a magnetic disk or tape, optical disk, hard disk, flash memory, or other storage media as is known in the art.

[0048] In the context of Figs. 3-7, the method may be implemented, for example, by operating portion(s) of the wireless network to execute a sequence of machine-readable instructions, such the server 112. The instructions can reside in various types of signal-

bearing or data storage primary, secondary, or tertiary media. The media may comprise, for example, RAM (not shown) accessible by, or residing within, the components of the wireless network. Whether contained in RAM, a diskette, or other secondary storage media, the instructions may be stored on a variety of machine-readable data storage media, such as DASD storage (e.g., a conventional "hard drive" or a RAID array), magnetic tape, electronic read-only memory (e.g., ROM, EPROM, or EEPROM), flash memory cards, an optical storage device (e.g. CD-ROM, WORM, DVD, digital optical tape), paper "punch" cards, or other suitable data storage media including digital and analog transmission media.

[0049] While the invention has been particularly shown and described with reference to a preferred embodiment thereof, it will be understood by those skilled in the art that various changes in form and detail maybe made without departing from the spirit and scope of the present invention as set for the in the following claims. Furthermore, although elements of the invention may be described or claimed in the singular, the plural is contemplated unless limitation to the singular is explicitly stated.

CLAIMS

What is claimed is:

1. A system for automatically creating a subscription for applications and services provided to wireless devices from at least one server on a wireless network, comprising:

one or more wireless devices selectively in communication with other computer devices across a wireless network, each wireless device including an end-user thereof and a computer platform able to selectively download and execute software applications thereupon and accessible by the end-user, the wireless device further having a subscriber thereof for access to the wireless network; and

at least one server selectively in communication with the one or more wireless devices across the wireless network, the at least one server selectively interacting with the one or more wireless devices upon request of the end-user of the wireless device through the wireless network,

wherein the end-user interaction with the at least one server across the wireless network causing a subscription of an application or service, such subscription requiring periodic payment by the wireless device subscriber for continued access to the application or service.

2. The system of claim 1, wherein the subscriptions for each wireless device are gathered into subscription data at the at least one server.

3. The system of claim 1, wherein the subscription data is transmitted to another computer device across the wireless network.

4. The system of claim 1, wherein the at least one server further periodically generates a bill for the subscriptions of the one or more wireless devices.

5. The system of claim 4, wherein the generated bill is transmitted from the at least one server to another computer device on the wireless network.

6. The system of claim 1, wherein the subscription occurs upon the download of an application from the at least one server to the wireless device computer platform.

7. The system of claim 1, wherein the subscription occurs upon the execution of an application resident on the at least one server.

8. The system of claim 1, wherein the subscription occurs upon access of the wireless device to an application resident on another computer device on the wireless network, and the at least one server records such access.

9. The system of claim 1, wherein the server further tracks subscription-ending events of the one or more wireless devices.

10. The system of claim 1, wherein the subscription-ending event is the wireless device indicating that the end-user has requested to end the subscription.

11. The system of claim 1, wherein the subscription-ending event is the wireless device deleting a subscribed application, the wireless device notifying the at least one server of such application deletion.

12. A system for automatically creating a subscription for applications and services provided to wireless devices from at least one server on a wireless network, comprising:

a wireless communication means for selectively communicating with other computer devices across a wireless network, and further selectively downloading and executing software applications thereupon, the wireless communication means further having a subscriber thereof for access to the wireless network; and

a subscription monitoring means for monitoring wireless communication means interaction with computer devices across the wireless network wherein such interaction causes the subscription of an application or service, such subscription requiring periodic payment by the wireless communication means subscriber for continued access to the application or service.

13. A server for selectively interacting with the one or more wireless devices across a wireless network, each wireless device including an end-user thereof and computer platform able to selectively download and execute software applications thereupon and accessible by the end-user, the wireless device further having a subscriber thereof for access to the wireless network, wherein the server automatically creating a subscription for applications and services provided to wireless devices across on a wireless network, the subscription caused by end-user interaction with a computer device across the wireless network and such subscription requiring periodic payment by the wireless device subscriber for continued access to the application or service.

14. The server of claim 13, wherein the subscriptions for each wireless device are gathered into subscription data at the server.

15. The server of claim 13, wherein the subscription data is transmitted to another computer device across the wireless network.

16. The server of claim 13, wherein the at least one server further periodically generates a bill for the subscriptions of the one or more wireless devices.

17. The server of claim 13, wherein the server subscription occurs upon the download of an application from the server to the wireless device computer platform.

18. The server of claim 13, wherein the subscription occurs upon the execution of an application resident on the server.

19. The server of claim 13, wherein the subscription occurs upon access of the wireless device to an application resident on another computer device on the wireless network and the server records such access.

20. The server of claim 13, wherein the server further tracks subscription-ending events of the one or more wireless devices.

21. The server of claim 20, wherein the subscription-ending event is the wireless device indicating that the end-user thereof has requested to end the subscription.

22. The server of claim 20, wherein the server receives notice of a wireless device deleting a subscribed application thereby causing a subscription-ending event.

23. A method for automatically creating a subscription for applications and services provided to wireless devices from computer devices on a wireless network, comprising the steps of:

causing a subscription of an application and service to occur from end-user interaction between a wireless device and a server, the wireless device selectively in communication with other computer devices across a wireless network and including a computer platform that further selectively downloads and executes software applications thereupon and which are accessible by the end-user; and

recording the subscriptions for the wireless devices at a server, such subscription requiring periodic payment by the wireless device subscriber for continued access to the application or service.

24. The method of claim 23, further comprising the step of transmitting the recorded subscriptions to another computer device on the wireless network.

25. The method of claim 23, further comprising the step of generating a bill at the server for a wireless device based upon the recorded subscriptions.

26. The method of claim 25, further comprising the step of transmitting the bill from the server to another computer device on the wireless network.

27. The method of claim 23, wherein the step of causing a subscription to occur is causing a subscription to occur through the download of an application from a computer device on the wireless network to the wireless device computer platform.

28. The method of claim 23, wherein the step of causing a subscription to occur is causing a subscription to occur through the execution of an application on the wireless device.

29. The method of claim 23, further comprising the step of tracking subscription-ending events of the wireless devices.

30. The method of claim 29, wherein the step of tracking subscription-ending events is tracking wireless device indications that the end-user has requested to end the subscription.

31. The method of claim 30, wherein the step of tracking subscription-ending events is tracking the wireless device deleting a subscribed application,

32. The method of claim 31, further comprising the step of the wireless device notifying the server of the deletion of a subscribed application.

33. A method for automatically creating a subscription for applications and services provided to wireless devices from computer devices on a wireless network, comprising the steps of:

- a subscription causation step for causing a subscription by a wireless device subscriber of an application and service that occurs from the wireless device end-user interaction from the wireless device to a server on the wireless network, such subscription requiring periodic payment by the wireless device subscriber for continued access to the application or service; and

- a recordation step of the subscriptions for the wireless device at one or more servers on the wireless network.

34. A computer program that when executed by a computer device on a wireless network, the computer device selectively providing applications and services to wireless devices on a wireless network, directs the computer device to perform the steps of:

causing a subscription of an application and service to occur from wireless device end-user interaction from a wireless device to the computer device, the wireless device selectively in communication with other computer devices across a wireless network and including a computer platform that further selectively downloads and executes software applications thereupon and which are accessible by the end-user; and

recording the subscriptions for the wireless devices at the computer device, such subscription requiring periodic payment by the wireless device subscriber for continued access to the application or service.

35. The program of claim 34, further directing the computer device to perform the step of transmitting the recorded subscriptions to another computer device on the wireless network.

36. The program of claim 34, further directing the computer device to perform the step of generating a bill for a wireless device based upon the recorded subscriptions.

37. The program of claim 36, further directing the computer device to perform the step of transmitting the bill to another computer device on the wireless network.

38. The program of claim 34, wherein program directs the step of causing a subscription to occur to be causing a subscription to occur through the download of an application from the computer device to the wireless device computer platform.

39. The program of claim 23, further directing the computer device to perform the step of tracking subscription-ending events of the wireless devices.

40. The program of claim 39, wherein the program directs the step of tracking subscription-ending events to be tracking wireless device indications that the end-user has requested to end the subscription.

41. The program of claim 40, wherein the program directs the step of tracking subscription-ending events to be tracking notifications from wireless devices indicating that the wireless device has deleted a subscribed application.

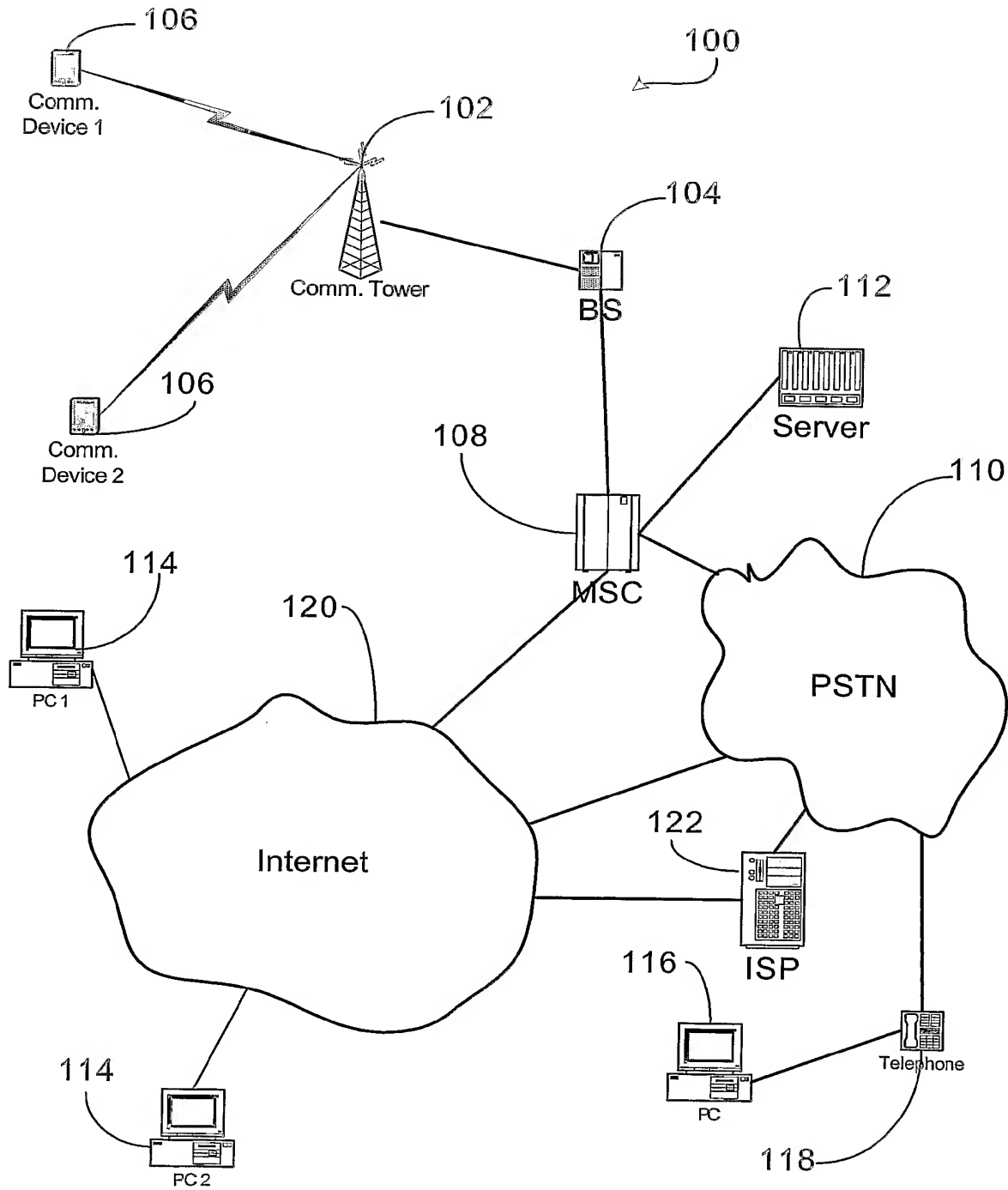


Fig. 1

2/9

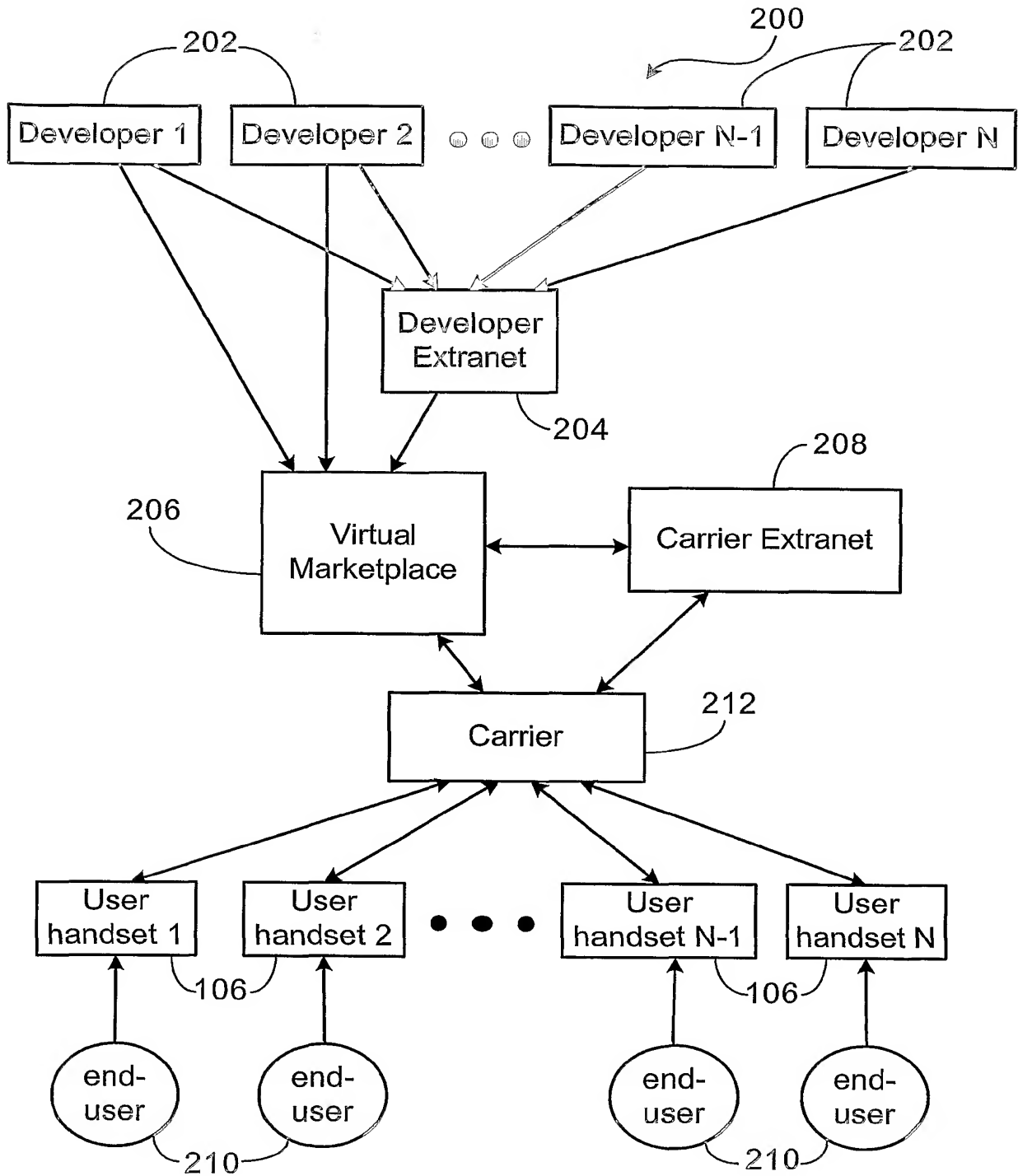


Fig. 2

3/9

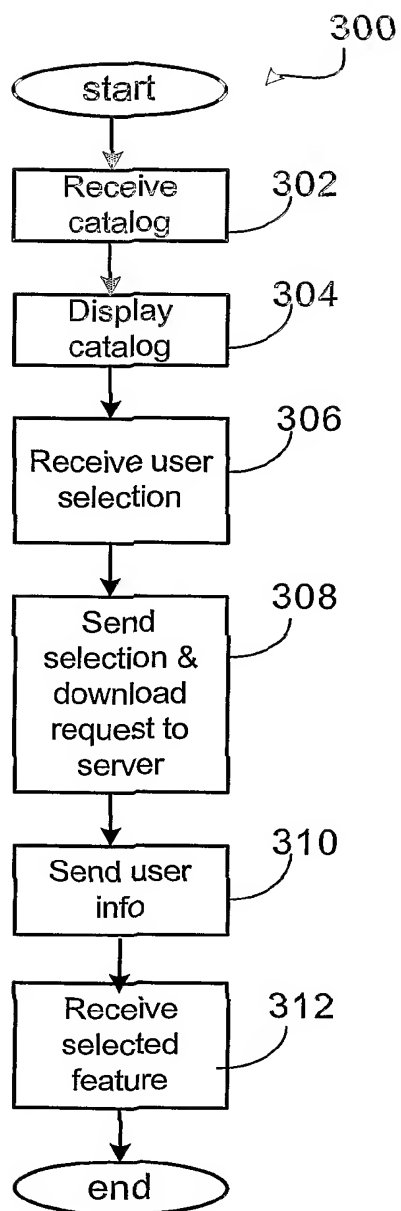


Fig. 3

4/9

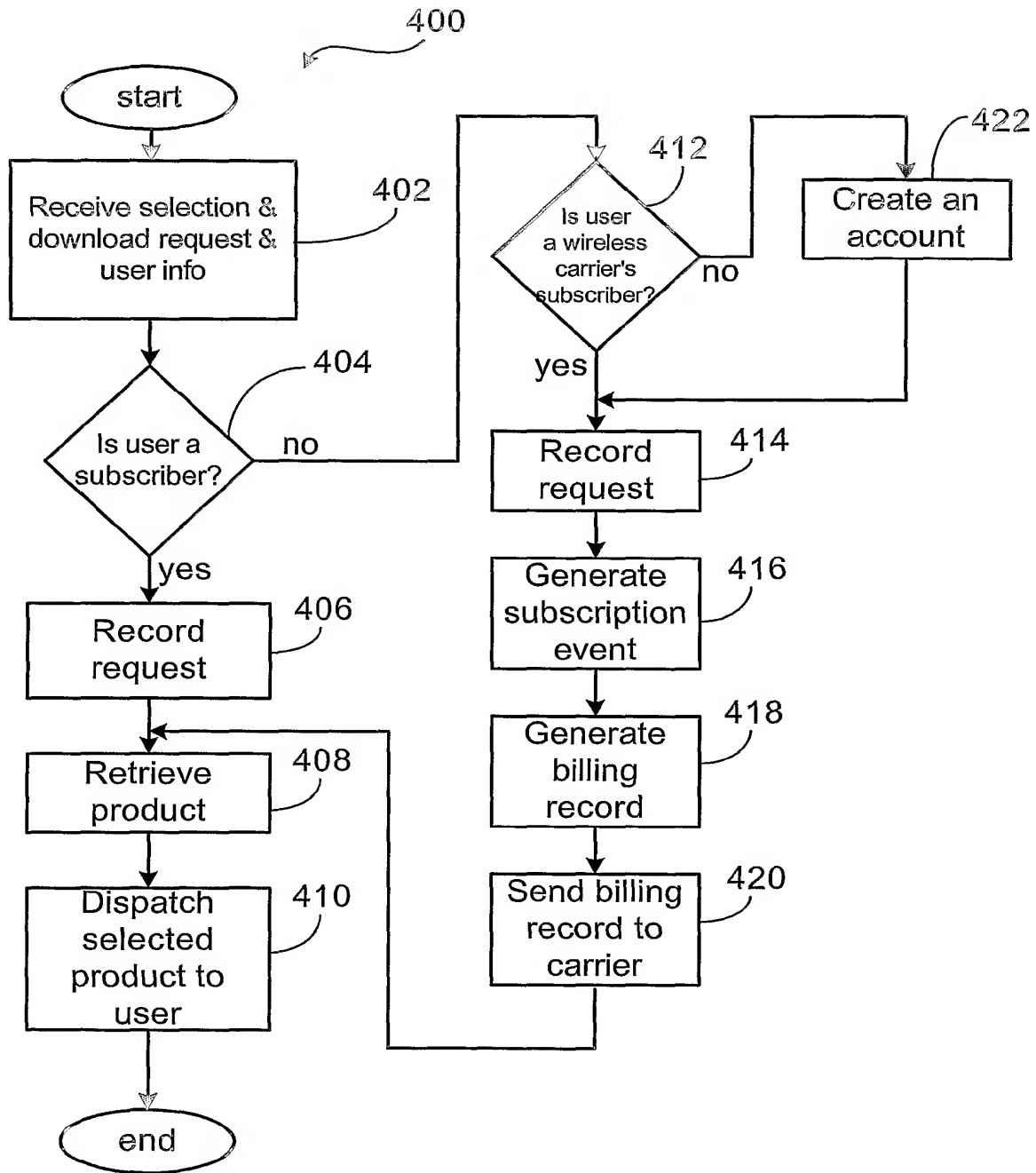


Fig. 4

5/9

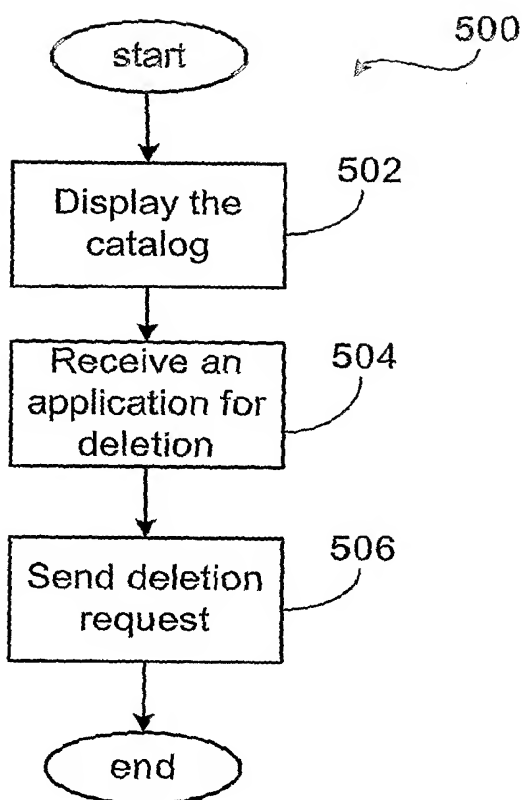


Fig. 5

6/9

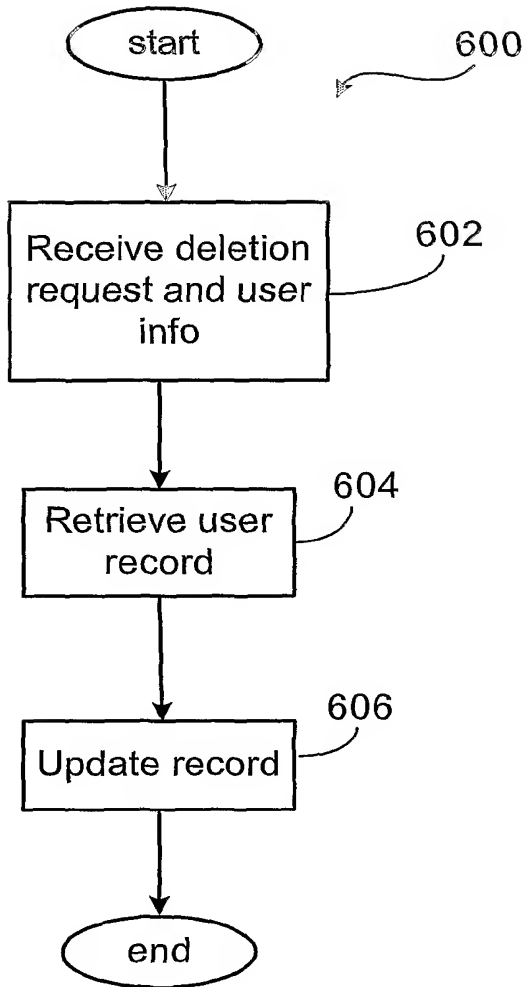


Fig. 6

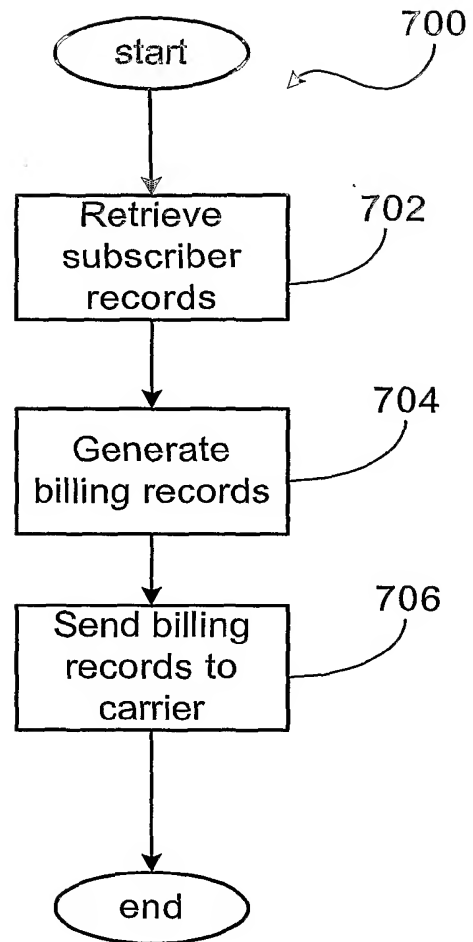


Fig. 7

7/9

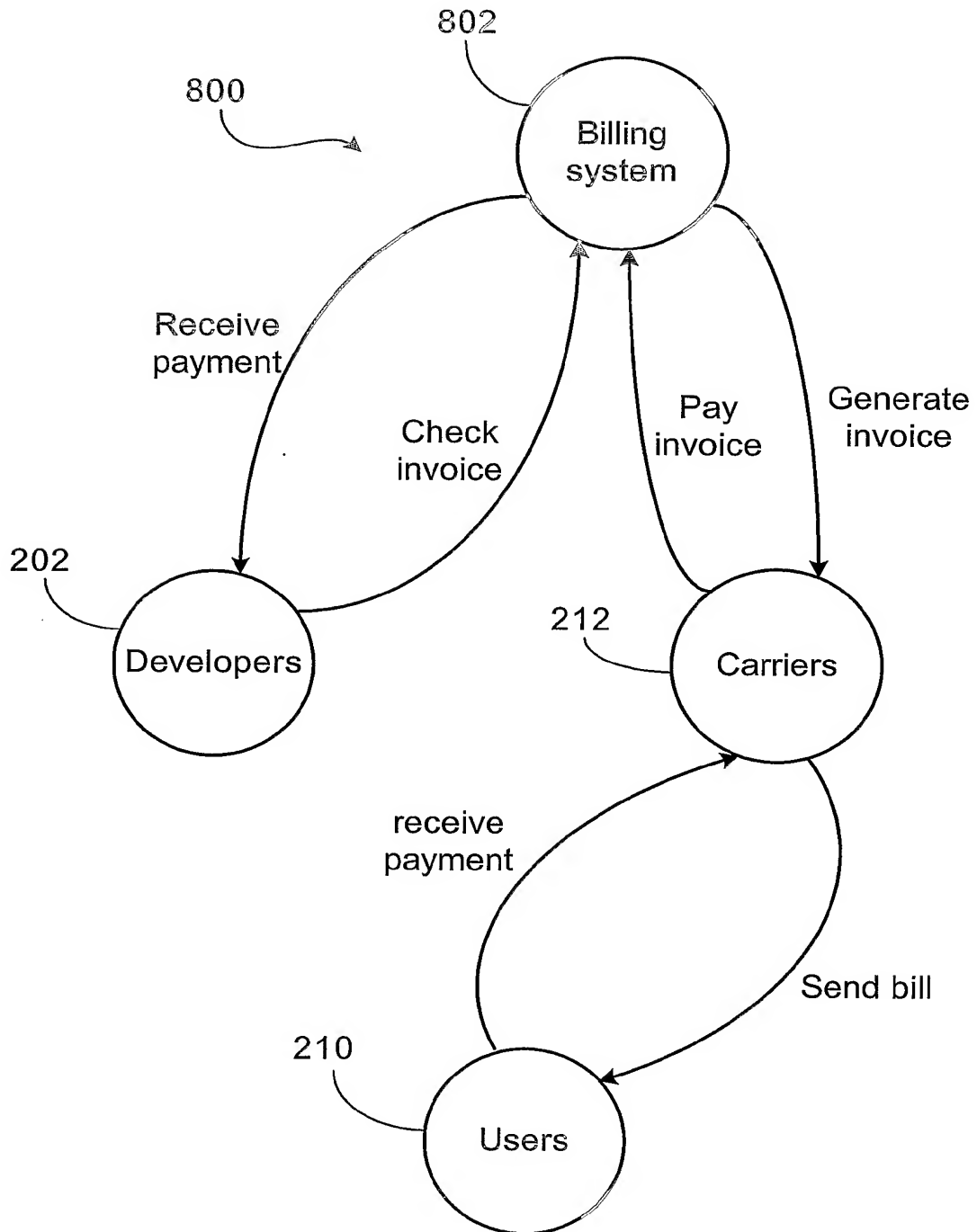


Fig. 8

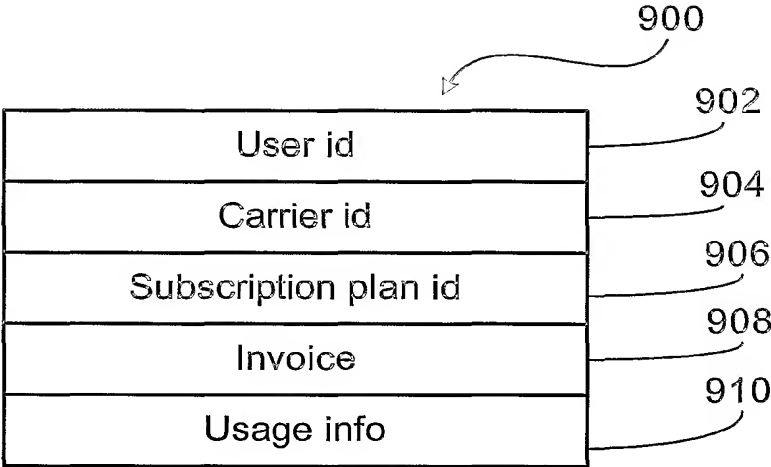


Fig. 9

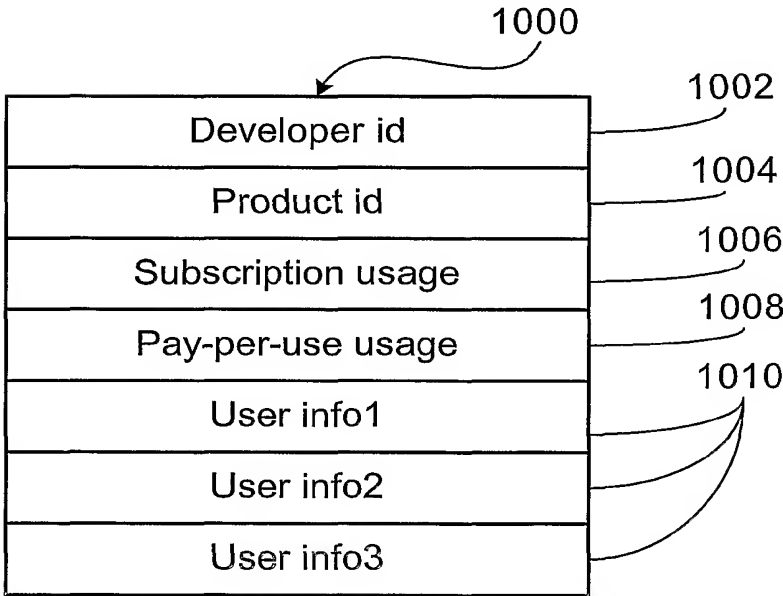


Fig. 10

9/9

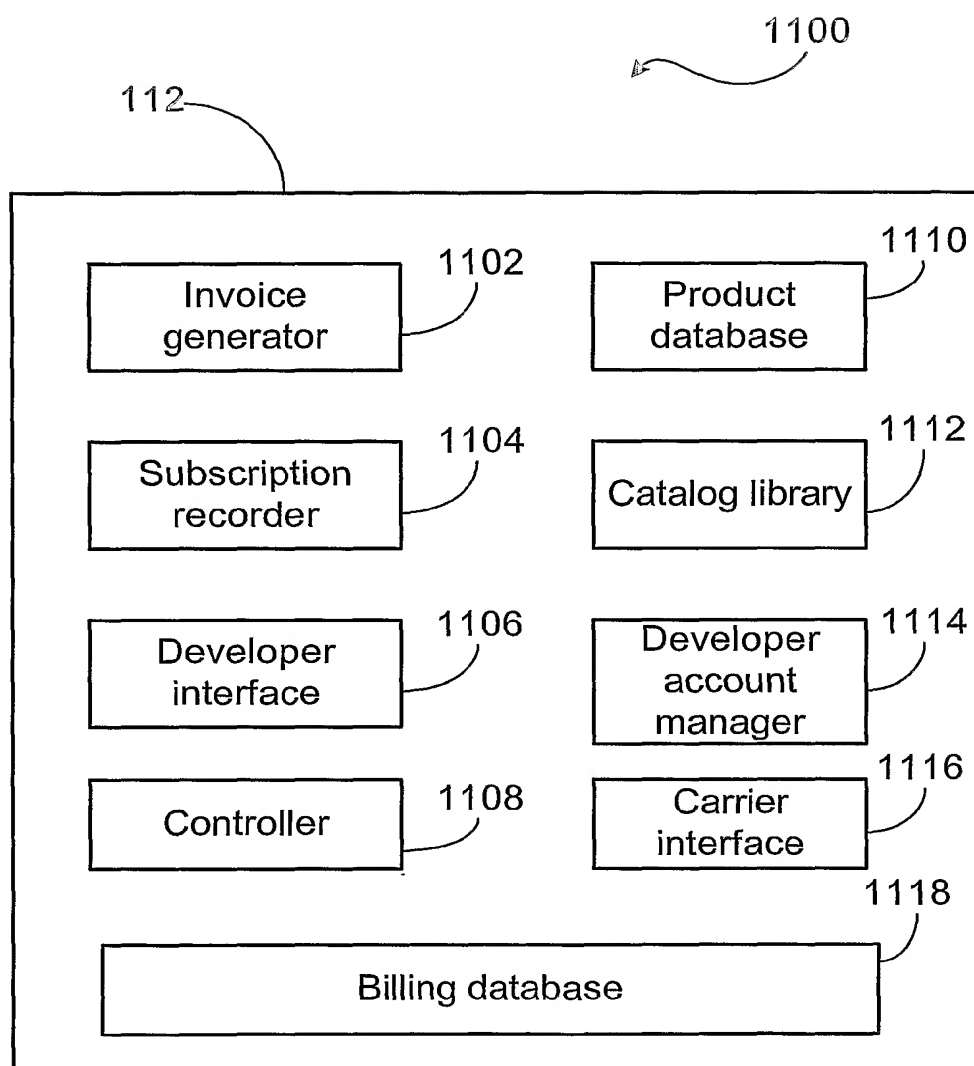


Fig. 11